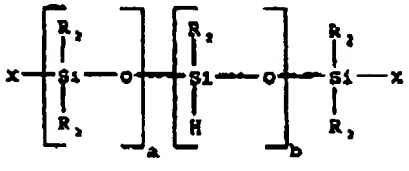
CLAIMS

1. Process for the preparation of a nonturbid functionalized silicone oil of stable viscosity by hydrosilylation of a polyorganohydrosiloxane with synthons, characterized in that:

(1) the synthons hydrosilylated with the polyorganohydrosiloxane are different or identical, comprising at least one hydrocarbon-comprising ring in which is included at least one oxygen atom,

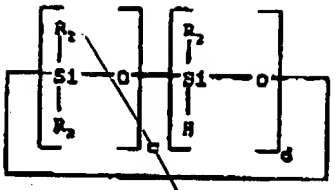
(2) the said hydrosilylation reaction is carried out in the presence of a heterogeneous catalytic composition comprising a metal chosen from the group consisting of cobalt, rhodium, ruthenium, platinum and nickel deposited on an inert support, the said inert support being selected from the group consisting of carbon black, charcoal, alumina, silicate and barium oxide, and

(3) the polyorganohydrosiloxane is linear or cyclic and has the mean formulae:



(XVI)

and/or



(XVII)

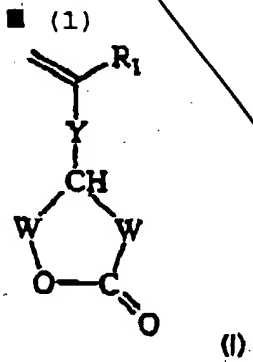
in which:

- the symbols R_2 are identical or different and correspond to a monovalent hydrocarbon-comprising radical chosen from the phenyl radical and linear or branched alkyl radicals having from 1 to 6 carbon atoms, preferably 1 to 3 carbon atoms;
- the symbols X are identical or different and correspond to a monovalent radical chosen from R_2, a hydrogen atom, a methoxy radical and an ethoxy radical;
- a and b are integers or fractions, such that:
  - $0 < a \leq 200$, preferably $0 < a \leq 99$,
  - $0 \leq b \leq 200$, preferably $1 < b \leq 100$,
  - and at least one of the two X groups corresponds to the hydrogen radical if $b = 0$,
  - $5 < a + b \leq 200$, preferably $10 < a + b \leq 100$;
- c and d are integers or fractions, such that:
  - $0 < c < 5$, preferably $0 < c < 3$,

- $1 < d < 10$, preferably $1 < d < 5$,
- $3 < a + b < 10$, preferably $3 < a + b < 5$.

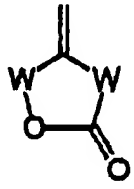
2. Preparation process according to claim 1, characterized in that the functionalized oils obtained are colourless and prepared in the presence of a catalytic composition according to claim 1, the inert support for which is carbon black.

3. Process according to claim 1 or 2, characterized in that the synthons comprise at least one hydrocarbon-comprising ring in which is included an oxygen atom, the synthons having the formula:



(I)

and/or



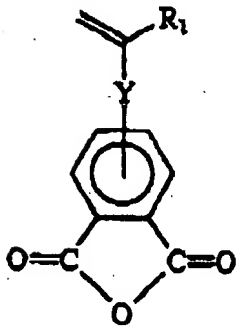
(II)

in which:

- the symbols W are identical or different and correspond to a divalent hydrocarbon-comprising radical chosen from linear or branched alkylene radicals having from 1 to 12 carbon atoms, it being possible for one of the symbols W to be a free valency;

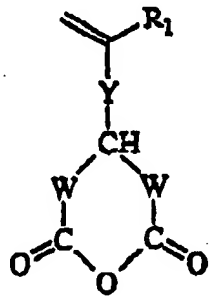
SUB A2

- the symbol Y corresponds to a free valency or a divalent radical chosen from linear or branched alkylene radicals having from 1 to 12 carbon atoms which can comprise a heteroatom, preferably an oxygen atom;
- the symbol R_1 corresponds to a hydrogen atom or monovalent hydrocarbon-comprising radical chosen from linear or branched alkyl radicals having from 1 to 12 carbon atoms and preferably a hydrogen atom or a methyl radical;
- (2)



(III)

and/or

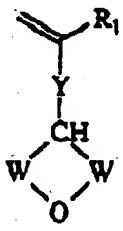


(IV)

in which:

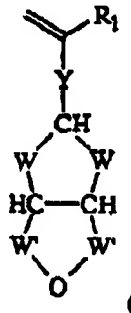
- the symbols W are identical or different and correspond to a divalent hydrocarbon-comprising radical chosen from linear or branched alkylene radicals having from 1 to 12 carbon atoms, it being possible for one of the symbols W to be a free valency;

- the symbol Y corresponds to a free valency or a divalent radical chosen from linear or branched alkylene radicals having from 1 to 12 carbon atoms which can comprise a heteroatom, preferably an oxygen atom;
- the symbol R_1 corresponds to a hydrogen atom or monovalent hydrocarbon-comprising radical chosen from linear or branched alkyl radicals having from 1 to 12 carbon atoms and preferably a hydrogen atom or a methyl radical;
- (3)



(V)

and/or



(VI)

in which:

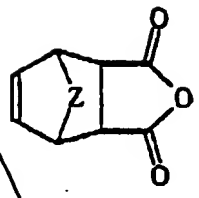
- the symbols W are identical or different and correspond to a divalent hydrocarbon-comprising radical chosen from linear or branched alkylene radicals having from 1 to 12 carbon atoms which can comprise at least one hydroxyl functional group, it being

Sub A2

possible for one of the symbols W to be a free valency for (V) and it being possible for both symbols W simultaneously to be a free valency for (VI);

- the symbols W' are identical or different and correspond to a divalent hydrocarbon-comprising radical chosen from linear or branched alkylene radicals having from 1 to 12 carbon atoms, it being possible for at least one of the symbols W' to be a free valency;
- the symbol Y corresponds to a free valency or a divalent radical chosen from linear or branched alkylene radicals having from 1 to 12 carbon atoms which can comprise a heteroatom, preferably an oxygen atom;
- the symbol R_1 corresponds to a hydrogen atom or monovalent hydrocarbon-comprising radical chosen from linear or branched alkyl radicals having from 1 to 12 carbon atoms and preferably a hydrogen atom or a methyl radical; and

■ (4)



(VII)

in which:

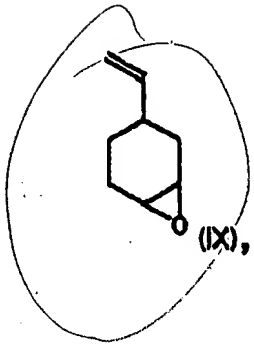
- the symbols W are identical or different and correspond to a free valency or a divalent hydrocarbon-comprising radical chosen from linear or branched alkylene radicals having from 1 to 2 carbon atoms;
- the symbol Z corresponds to a divalent radical chosen from a carbon atom or a heteroatom.

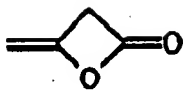
4. Process according to claim 3, ~~characterized in that~~ the hydrocarbon-comprising ring of the synthons comprises at most 8 atoms ~~in the~~ said ring.

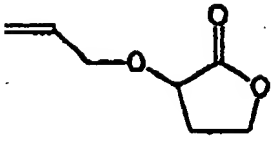
5. Process according to ~~either one of claims 3 and 4, characterized in that~~ the synthons comprise a hydrocarbon-comprising ring in which is included an oxygen atom.

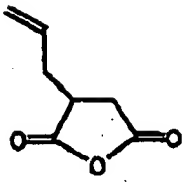
6. Process according to ~~any one of claims 3, 4 and 5, characterized in that~~ the synthon has the formula:

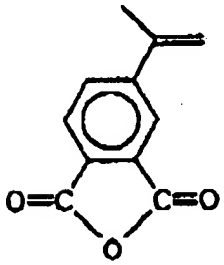

(VIII),

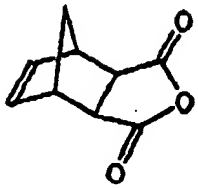

(IX),


(X),

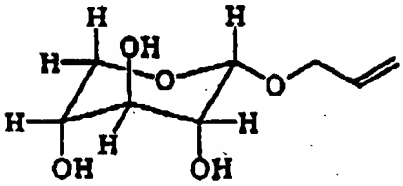

(XI),


(XII),


(XIII),


(XIV)

and


(XV).

7. Process according to ~~any one of claims 3 to 6~~ claim 3, ~~characterized in that~~ wherein the synthons which react with the polyorganohydrosiloxane are identical synthons.

8. Process according to ~~any one of claims 1~~ claim 1

~~to 7~~, ~~characterized in that~~ Wherein the polyorganohydrosiloxane/synthons molar ratio is between 0.01 and 100, ~~preferably between 0.1 and 10.~~

9. Process according to ~~either one of claims 1 and 2~~ Claim 1, ~~characterized in that~~ Wherein the amount of metal is between 0.1% and 5% with respect to the weight of the inert support.

10. Process according to ~~either one of claims 1 and 2~~ Claim 1, ~~characterized in that~~ Wherein the amount of metal in the catalytic composition is between 1 and 1000 ppm with respect to the weight of the polyorganohydrosiloxane.

11. Process according to ~~either one of claims 1 and 2~~ Claim 1, ~~characterized in that~~ Wherein the metal of the catalytic composition is platinum.

12. Process according to ~~any one of the preceding claims~~ Claim 1, ~~characterized in that~~ Wherein the polyorganohydrosiloxane and the synthon pass over or through a stationary bed of the catalytic composition.

13. Silicone oil comprising synthons comprising a hydrocarbon-comprising ring ~~in which is included~~ having an oxygen atom, which can be obtained by the process according to ~~any one of claims 1 to 12~~ Claim 1.

14. Silicone oil comprising synthons comprising at least one epoxide, which can be obtained by the process according to ~~any one of claims 1 to 12~~ Claim 1.

15. Silicone oil comprising synthons of

formula (IX), which can be obtained by the process according to ~~any one of claims 1 to 12~~ claim 1.

16. Use of the silicone oils according to any one of claims 13, 14 and 15 in the preparation of antiadhesion products for paper, glass, plastic and/or metal.

17. Use of the silicone oils according to any one of claims 13, 14 and 15 in the preparation of varnishes, inks and/or coatings.

18. Process according to any one of claims 1 to 12, characterized in that it comprises the following stages:

(a) an amount of 5 to 5000 ppm, preferably of 10 to 100 ppm, of heterogeneous catalytic composition with respect to the total mass of the reactants is introduced under an inert gas into the reaction mixture;

(b) the synthon is introduced into the reaction mixture;

(c) the said mixture is heated to a temperature of between 25°C and 200°C and preferably between 50°C and 160°C;

(d) the polyorganohydrosiloxane is subsequently introduced over a period of time of between 0 and 24 hours, preferably between 2.5 and 5 hours, the synthon/polyorganohydrosiloxane molar ratio being between 1 and 1.10;

(e) the reaction mass is subsequently filtered in order to separate the heterogeneous catalytic composition and the functionalized silicone oil; and

(f) the functionalized silicone oil is finally devolatilized.

19. Process according to claim 18, ~~characterized in that~~ wherein the polyorganohydrosiloxane and the synthon react in the reaction mixture in the absence of solvent.

20. Use of a supported heterogeneous catalytic composition in the preparation of functionalized silicone oils which are stable and nonturbid, characterized in that the heterogeneous catalytic composition comprises a metal chosen from the group consisting of cobalt, rhodium, ruthenium, platinum and nickel deposited on an inert support, the said inert support being selected from the group consisting of carbon black, charcoal, alumina, silicate and barium oxide and preferably carbon black.

21. Use according to claim 20 in the preparation of functionalized silicone oils which are stable, non-coloured and nonturbid, characterized in that the inert support of the heterogeneous catalytic composition is carbon black.